AMENDMENT AND PRESENTATION OF CLAIMS

Please replace all prior claims in the present application with the following claims, in which claims 6, 13, 20, and 27 are canceled without prejudice or disclaimer, claims 1, 2, 5, 7-9, 14-16, 21-23 and 28 are currently amended, and claims 29-39 are newly presented.

1. (Currently Amended) A communication system comprising:

~~a client configured to transmit a message requesting content specifying an object from a content server; and~~

~~a plurality of proxy servers including~~ a downstream proxy server ~~and an upstream proxy server, the downstream proxy server being~~ configured to communicate with ~~the~~ a client that is configured to transmit a message requesting content specifying an object from a content server, wherein the message includes a cookie associated with the client~~;~~ ; and

~~wherein the~~ an upstream proxy server ~~is~~ configured to include the cookie in a read-ahead request to retrieve the content from the content server and to forward ~~information associated with~~ the object in accordance with the cookie over a data network to the downstream proxy server prior to the client transmitting another message requesting the object.

2. (Currently Amended) A system according to claim 1, wherein the upstream proxy server transmits the object to the downstream proxy server based on a predetermined criteria relating to the object, the predetermined criteria including size of the object or life of the object.

3. (Original) A system according to claim 1, wherein the downstream proxy server and the upstream proxy server communicate over a communications link that includes at least one of plurality of Transmission Control Protocol (TCP) connections to support parallel Hypertext Transfer Protocol (HTTP) transactions, and a multiplexed connection of HTTP transactions.

4. (Original) A system according to claim 1, wherein the data network includes at least one of a Very Small Aperture Terminal (VSAT) satellite network, and a terrestrial wide area network (WAN).

5. (Currently Amended) A system according to claim 1, further comprising:

~~wherein the plurality of proxy servers include~~ other downstream proxy servers in communication with the upstream proxy server, the upstream proxy server multicasting the object to the downstream proxy servers over the data network.

6. (Canceled) ~~A system according to claim 1, wherein the content server forwards content to the upstream proxy server, the upstream proxy server forwarding the content along with the information associated with the object to the downstream proxy server.~~

7. (Currently Amended) A system according to claim ~~6~~ 1, wherein the content conforms with a markup language that includes Hypertext Markup Language (HTML).

8. (Currently Amended) A method of providing content to a client, the method comprising:

receiving a message, forwarded by a downstream server, from the client;

determining whether the message includes a cookie associated with the client;

including the cookie in a read-ahead request;

retrieving the content specifying an object based on the read-ahead request; and

forwarding ~~information associated with~~ the object in accordance with the cookie to ~~a~~ the downstream server prior to the client transmitting a message requesting the object.

9. (Currently Amended) A method according to claim 8, further comprising:

retrieving the object; and

transmitting the object over a communications link to the downstream server based on a predetermined criteria relating to the object, wherein the predetermined criteria includes size of the object or life of the object.

10. (Original) A method according to claim 9, wherein the communications link in the transmitting step includes at least one of plurality of Transmission Control Protocol (TCP) connections to support

parallel Hypertext Transfer Protocol (HTTP) transactions, and a multiplexed connection of HTTP transactions.

11. (Original) A method according to claim 9, wherein the communications link in the transmitting step is established over a data network that includes at least one of a Very Small Aperture Terminal (VSAT) satellite network, and a terrestrial wide area network (WAN).

12. (Original) A method according to claim 8, further comprising:

retrieving the object; and

multicasting the object to the downstream server.

13. (Canceled) ~~A method according to claim 8, further comprising:~~

~~receiving a message requesting the content from the downstream server;~~

~~retrieving the content in response to the received message; and~~

~~forwarding the content along with the information associated with the object to the downstream server.~~

14. (Currently Amended) A method according to claim ~~13~~ 8, wherein the content conforms with a markup language that includes Hypertext Markup Language (HTML).

15. (Currently Amended) A network device comprising:

means for receiving a message, forwarded by a downstream server, from the client;

means for determining whether the message includes a cookie associated with the client;

means for including the cookie in a read-ahead request;

means for retrieving content specifying an object from a content server based on the read-ahead request; and

means for forwarding ~~information associated with~~ the object in accordance with the cookie to a the downstream server prior to the client transmitting a message requesting the object.

16. (Currently Amended) A network device according to claim 15, wherein the object is retrieved and transmitted over a communications link to the downstream proxy server based on a predetermined criteria relating to the object, the predetermined criteria including size of the object or life of the object.

17. (Original) A network device according to claim 16, wherein the communications link in the includes at least one of plurality of Transmission Control Protocol (TCP) connections to support parallel Hypertext Transfer Protocol (HTTP) transactions, and a multiplexed connection of HTTP transactions.

18. (Original) A network device according to claim 16, wherein the communications link is established over a data network that includes at least one of a Very Small Aperture Terminal (VSAT) satellite network, and a terrestrial wide area network (WAN).

19. (Original) A network device according to claim 15, wherein the object is retrieved and multicast to the downstream server.

20. (Canceled) ~~A network device according to claim 15, further comprising: means for receiving a message requesting the content from the downstream proxy server, the content being retrieved in response to the received message, the content being forwarded along with the information associated with the object to the downstream server.~~

21. (Currently Amended) A network device according to claim ~~20~~ 15, wherein the content conforms with a markup language that includes Hypertext Markup Language (HTML).

22. (Currently Amended) A computer-readable medium carrying one or more sequences of one or more instructions for providing content to a client, the one or more sequences of one or more instructions including instructions which, when executed by one or more processors, cause the one or more processors to perform the steps of:

receiving a message, forwarded by a downstream server, from the client;

determining whether the message includes a cookie associated with the client;

including the cookie in a read-ahead request;

retrieving the content specifying an object based on the read-ahead request; and

forwarding ~~information associated with~~ the object in accordance with the cookie to a the downstream server prior to the client transmitting a message requesting the object.

23. (Currently Amended) A computer-readable medium according to claim 22, wherein the one or more processors further perform the step of:

retrieving the object; and

transmitting the object over a communications link to the downstream server based on a predetermined criteria relating to the object, wherein the predetermined criteria includes size of the object or life of the object.

24. (Original) A computer-readable medium according to claim 23, wherein the communications link in the transmitting step includes at least one of plurality of Transmission Control Protocol (TCP) connections to support parallel Hypertext Transfer Protocol (HTTP) transactions, and a multiplexed connection of HTTP transactions.

25. (Original) A computer-readable medium according to claim 23, wherein the communications link in the transmitting step is established over a data network that includes at least one of a Very Small Aperture Terminal (VSAT) satellite network, and a terrestrial wide area network (WAN).

26. (Original) A computer-readable medium according to claim 22, wherein the one or more processors further perform the step of:

retrieving the object; and

multicasting the object to the downstream server.

27. (Canceled) ~~A computer-readable medium according to claim 22, wherein the one or more processors further perform the steps of:~~

~~receiving a message requesting the content from the downstream server;~~

~~retrieving the content in response to the received message; and~~

~~forwarding the content along with the information associated with the object to the downstream server.~~

28. (Currently Amended) A computer-readable medium according to claim ~~27~~ 22, wherein the content conforms with a markup language that includes Hypertext Markup Language (HTML).

29. (New) A method according to claim 8, further comprising:

forwarding a list specifying expected objects corresponding to the content, wherein the downstream server blocks requests from the client for objects on the list.

30. (New) A method according to claim 8, further comprising:

determining whether the object is cacheable, wherein the object is forwarded if the object is cacheable.

31. (New) A method according to claim 8, wherein the downstream server explicitly tracks objects stored in a local cache, the downstream server forwarding the message only if the object associated with the requested content is not stored in the local cache.

32. (New) A device according to claim 15, further comprising:

means for forwarding a list specifying expected objects corresponding to the content, wherein the downstream server blocks requests from the client for objects on the list.

33. (New) A device according to claim 15, further comprising:

means for determining whether the object is cacheable, wherein the object is forwarded if the object is cacheable.

34. (New) A device according to claim 15, wherein the downstream server explicitly tracks objects stored in a local cache, the downstream server forwarding the message only if the object associated with the requested content is not stored in the local cache.

35. (New) A method of providing content to a client, the method comprising:

receiving a message from a client requesting content specifying an object from a content server, wherein the message includes a cookie;

transmitting the message to an upstream server configured to include the cookie in a request to retrieve the content from the content server; and

receiving, from the upstream server, the object in accordance with the cookie over a data network prior to the client transmitting another message requesting the object.

36. (New) A method according to claim 35, further comprising:

receiving a list specifying expected objects corresponding to the content; and

blocking requests from the client for objects on the list from being transmitted to the upstream server.

37. (New) A method according to claim 35, further comprising:

determining whether the object is cacheable, wherein the object is forwarded if the object is cacheable.

38. (New) A method according to claim 35, further comprising:

explicitly tracking objects stored in a local cache; and

forwarding the message only if the object associated with the requested content is not stored in the local cache.

39. (New) A method according to claim 35, wherein the upstream server determines whether the object is cacheable.